

Patent claims

1. A method to assemble a leadframe strip assembly comprising the following steps:

5 - providing a metal foil (12),
 - attaching a carrier tape (13) to the metal foil (12),
 - forming a plurality of leadframes (3) in the metal foil (12), each leadframe (3) comprising a die pad (4) laterally surrounded by a plurality of contact leads (5).

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2. A method to assemble a leadframe strip assembly according to claim 1

characterized in that
the plurality of leadframes (3) are formed by an etching
15 process.

3. A method to assemble a leadframe strip assembly according to claim 1 or claim 2

characterized in that

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the etching process is performed from one side of the metal foil (12) forming a plurality of isolated leadframes (3).

4. A leadframe strip assembly comprising:

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- a carrier tape (13) including a metal foil (12) attached thereon,
- a plurality of leadframes (3) formed in the metal foil (12) each leadframe (3) comprising a die pad (4) laterally surrounded by a plurality of contact leads (5) in
30 the metal foil (12).

5. A leadframe strip assembly according to claim 4

characterized in that
the die pad (4) and contact leads (5) of each leadframe
(3) of the metal foil (12) are spatially isolated from
each other.

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6. A leadframe strip assembly according to claim 4 or claim 5
characterized in that
each leadframe (3) of the metal foil (12) is spatially
isolated from its neighbour.

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7. A leadframe strip assembly according to one of claims 4 to
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characterized in that
the carrier tape (13) comprises a polyimide film with a
15 silicone adhesive coating (17) and the metal foil (12)
comprises OFHC Cu.

8. A leadframe strip assembly according to one of claims 4 to
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20 characterized in that

the metal foil comprises a thickness of approximately 1mm
to approximately 0.01mm or approximately 0.25mm to ap-
proximately 0.1mm.

25 9. A leadframe strip assembly according to one of claims 4 to
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characterized in that

the leadframe strip assembly further comprises a plurality
of semiconductor die (2), each including an active surface
30 with a plurality of die contact pads (7) and a passive
surface, attached to the die attach pads (4) and electri-
cally connected to the leadframe (3) by a plurality of

bond wires (9) connecting the die contact pads (7) and the lead contact areas (6) of the contact leads (5).

10. A panel (14) comprising a section of the leadframe strip
5 assembly according to claim 9
characterized in that
the plurality of dies (2), contact leads (5), wire bonds
(9) and upper surface of the carrier tape (13) are encapsulated with mold material (10).

10 11. A method to assemble a non-leaded semiconductor package
(1) comprising the following steps:
- providing a panel according to claim 10,
- removing the carrier tape (13), and
15 - singulating the non-leaded semiconductor packages (1).

12. A non-leaded semiconductor package (1) comprising:
- a leadframe (3) comprising a die attach pad (4) approximately in its lateral centre, laterally surrounded
20 by a plurality of contact leads (5) each having a contact area (6),
- semiconductor die (2) including an active surface with a plurality of die contact pads (7) and a passive surface, attached to the die attach pad (4) electrically connected to the leadframe (3) by a plurality of bond wires (9) connecting the die contact pads (7) and the lead contact areas (6) of the contact leads (5),
- the upper surface of the die (2), contact leads (5), bond wires (9) and space between the die pad (4) and
25 contact leads (5) being encapsulated with mold material (10),
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- the bottom surface (11) of the non-leaded package (1) comprising mold material (10) and the bottom surface of the die attach pad (4) and contact leads (5) on an essentially common plane.

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13. A non-leaded semiconductor package (1) according to claim

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characterized in that

the leadframe (3) comprises a thickness of approximately

10 1mm to approximately 0.01mm or approximately 0.25mm to approximately 0.1mm.

Reference Numbers

- 1 non-leaded semiconductor package
- 2 semiconductor die
- 5 3 leadframe
- 4 die attach pad
- 5 contact lead
- 6 contact lead contact area
- 7 die contact pad
- 10 8 die attach material
- 9 wire bond
- 10 mold material
- 11 bottom surface of package
- 12 non-leaded package
- 15 13 carrier tape
- 14 molded leadframe module
- 15 singulation lines
- 16 bottom surface of leadframe module
- 17 adhesive coating
- 20 18 saw blade
- 19 protruding portion